

We claim:

1. A prosaposin receptor agonist having from about 14 to 50 amino acids and comprising the amino acid sequence LIRX₁NNX₂TX₃X₄X₃X₁X₁, wherein:
- X₁ is any amino acid;
 - X₂ is any amino acid, but not L or R;
 - X₃ is a charged amino acid; and
 - X₄, when present, is a charged amino acid.
2. The prosaposin receptor agonist of claim 1, wherein LIRX₁NNX₂TX₃X₄X₃X₁X₁ has the amino acid sequence shown in SEQ ID NO:2.
3. The prosaposin receptor agonist of claim 1, wherein the prosaposin receptor agonist consists of the sequence shown in SEQ ID NO:1 or SEQ ID NO:2.
4. A pharmaceutical composition comprising the prosaposin receptor agonist of claim 1 in a pharmaceutically acceptable carrier.
5. The composition of claim 4 in a controlled release formulation.
6. The composition of claim 4 in a liposomal form.
7. The composition of claim 4 in a lyophilized form.
8. The composition of claim 4 in a unit dosage form.
9. A method of alleviating neuropathic pain in a subject, comprising administering a neuropathic pain alleviating amount of a prosaposin receptor agonist to the subject.

10. The method of claim 9, wherein the prosaposin receptor agonist has from about 14 to 50 amino acids and comprises the amino acid sequence LIRX₁NNX₂TX₃X₄X₃X₁X₁, wherein:

X₁ is any amino acid;

X₂ is any amino acid, but not L or R;

X₃ is a charged amino acid; and

X₄, when present, is a charged amino acid.

11. The method of claim 10, wherein LIRX₁NNX₂TX₃X₄X₃X₁X₁ has the amino acid sequence shown in SEQ ID NO:2.

12. The method of claim 10, wherein the prosaposin receptor agonist is an amino acid sequence selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:2.

13. The method of claim 9, wherein prosaposin receptor agonist is an amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18 and SEQ ID NO:19.

14. The method of claim 9, wherein the neuropathic pain results from a peripheral nerve disorder.

15. The method of claim 14, wherein the peripheral nerve disorder is selected from the group consisting of neuroma; nerve compression; nerve crush, nerve stretch and incomplete nerve transection; mononeuropathy and polyneuropathy.

16. The method of claim 9, wherein the neuropathic pain results from a disorder selected from the group consisting of a disorder of dorsal root ganglia, spinal cord, brainstem, thalamus and cortex.

17. The method of claim 9, wherein the administering is selected from the group consisting of intravenous, intramuscular, intradermal, subcutaneous, intracranial, intracerebrospinal, topical, oral, transdermal, transmucosal and transnasal.

18. A method of inhibiting the onset of neuropathic pain in a subject, comprising administering a neuropathic pain alleviating amount of a prosaposin receptor agonist to the subject.

19. The method of claim 18, wherein the prosaposin receptor agonist has from about 14 to 50 amino acids and comprises the amino acid sequence LIRX₁NNX₂TX₃X₄X₃X₁X₁, wherein:

X₁ is any amino acid;

X₂ is any amino acid, but not L or R;

X₃ is a charged amino acid; and

X₄, when present, is a charged amino acid.

20. The method of claim 19, wherein LIRX₁NNX₂TX₃X₄X₃X₁X₁ has the amino acid sequence shown in SEQ ID NO:2.

21. The method of claim 18, wherein the prosaposin receptor agonist consists of the amino acid sequence shown in SEQ ID NO:1 or SEQ ID NO:2.

22. A method of stimulating neurite outgrowth, inhibiting neural cell death, promoting myelination or inhibiting demyelination, comprising:

contacting neuronal cells with a composition comprising an effective amount of a prosaposin receptor agonist, wherein the prosaposin receptor agonist has from about 14 and 50 amino acids and comprises the sequence shown in SEQ ID NO:2.

23. The method of claim 22, wherein the composition comprises a peptide having the sequence shown in SEQ ID NO:2.

24. The method of claim 22, wherein the contacting is *in vitro*.

25. The method of claim 22, wherein the contacting is *in vivo*.

26. A method of inhibiting sensory or motor neuropathy, comprising:
contacting neuronal cells with a composition comprising an inhibiting effective amount of a prosaposin receptor agonist.

27. The method of claim 26, wherein the prosaposin receptor agonist has from about 14 to 50 amino acids and comprises the amino acid sequence LIRX₁NNX₂TX₃X₄X₃X₁X₁, wherein:

X₁ is any amino acid;

X₂ is any amino acid, but not L or R;

X₃ is a charged amino acid; and

X₄, when present, is a charged amino acid.

28. The method of claim 27, wherein LIRX₁NNX₂TX₃X₄X₃X₁X₁ has the amino acid sequence shown in SEQ ID NO:2.

29. The method of claim 26, wherein the prosaposin receptor agonist is selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:2.

30. The method of claim 26, wherein the contacting is *in vitro*.

31. The method of claim 26, wherein the contacting is *in vivo*.